



Frasca Piper Navajo Simulator with Attached Operator Station Enclosure

## 140/240 SERIES OPTIONS

### 140/240 SERIES

#### ATTACHED OPERATOR STATION ENCLOSURE

To assure maximum privacy and minimum disturbance from outside sources, an operator station enclosure may be attached to any Frasca simulator. The structure will contain lighting and ventilation independent of the simulator's systems, a standard Operator Station, and seating for the instructor.

#### CIRCUIT BREAKERS (OPERABLE)

This option simulates operable circuit breakers. The pilot may isolate the electrical item by manually pulling the circuit breaker and the instructor may simulate realistic failures by remotely "popping" circuit breakers. The following breakers are simulated: Alternator field and output, landing gear control, landing gear pump, flaps, pitot heat, comms 1 & 2, navs 1 & 2, ADF, DME, transponder, fuel pump, instrument lights, and a spare. This option, including software, new right side panel and driver board, can be field installed.

#### COMPUTER INTERACTIVE FLIGHT SIMULATION (CIFS)

CIFS interfaces an industry standard, general purpose computer with a 140/240 flight simulator. Through the interface, the computer is able to monitor and/or manipulate variables from the simulator's host microprocessor. The software features four programs to support the instructional process: Map, Approach, Record/Playback, and Score.

The Map program provides real-time, simulator ground-track on the computer's monitor. At the operator's request, the variable scale display will also show the location of ground-based navigation facilities.

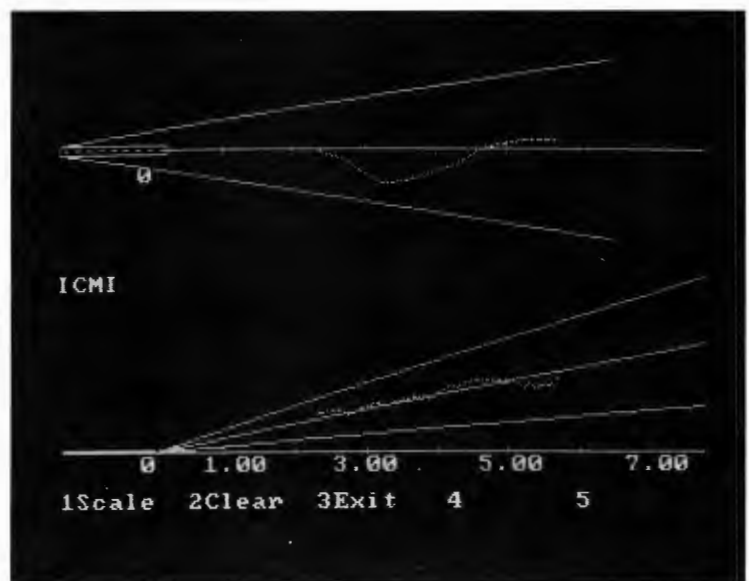
The Approach program is similar to Map but displays a real-time track relative to an ILS approach. It plots the simulator's track relative to the localizer and glideslope, and shows distance to touchdown.

Record/Playback allows the operator to record any combination of: pitch, bank, altitude, heading, airspeed, and position and store it for future playback. The playback function will replay recorded information on the appropriate flight instruments. At the operator's discretion, playback

may occur in real-time or may be accelerated several times faster than originally recorded.

The Score program gives the operator the capability of designing a pattern of up to 16-legs and then monitoring the pilot's performance flying it. Within each leg any of 9 variables may be scored, including pitch, bank, altitude, vertical speed, airspeed, rate of turn, slip and heading. Any deviation from the nominal values will result in the accrual of penalty points based on both amount and duration of error.

One of the most important aspects of CIFS is the ability to access the host computer's data. This gives the experienced programmer the ability to develop sophisticated training and data manipulation programs.



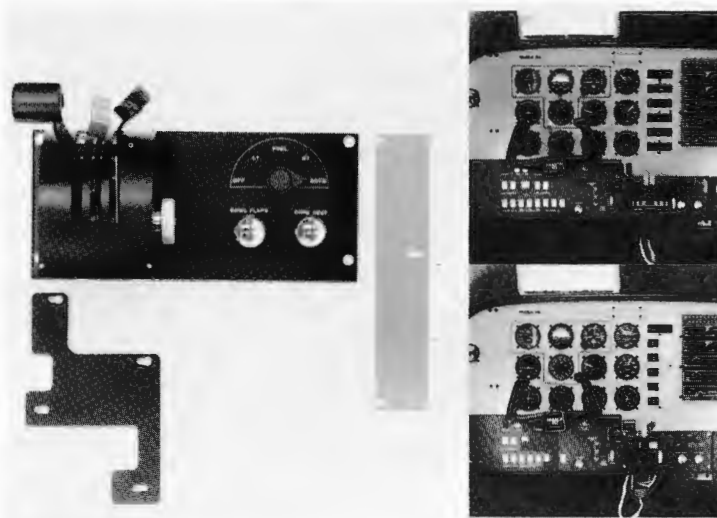
Computer Interactive Flight Simulation (CIFS) Approach Display

## 142 SINGLE ENGINE CONVERSION

For maximum training flexibility Frasca offers the 142 Single Engine Conversion kit. This quick change kit provides a single engine throttle quadrant and gauge/switch covers. The throttle quadrant is secured to the instrument panel by Dzus fasteners and a single quick-disconnect umbilical chord for rapid removal and replacement. Each quadrant contains throttle(s), Prop lever(s), Mixture control(s), friction lock, and fuel system controls. In addition, quick attach plates cover the second set of engine instruments, mag switches, starter switch and primer control. The performance and handling characteristics for single or multiengine, constant speed or fixed pitch prop, and retractable or fixed gear operation is immediately alterable through the software by selecting any one of nine sets of Performance Constants (eight are user defined). This system gives the operator the ability to simulate any single or twin engine recip aircraft with a single training device. Change over typically can be performed in less than five minutes.

## EGT, FUEL FLOW, LOAD METER, AND GYRO PRESSURE CLUSTER

This Model 141 optional set of instruments includes working models of EGT (exhaust gas temperature gauge), fuel flow indicator, electrical load meter, and gyro pressure. The EGT responds appropriately to both engine power and mixture settings permitting realistic training in engine leaning techniques. The fuel flow indicator appropriately responds to throttle and mixture position. The electrical load meter reflects an average system load. If the alternator goes off line or engine rotation goes to zero, the load meter reads zero. The operator may also set the load meter to read anything from 0 to 100% through the operator control monitor. The gyro pressure gauge has a single needle indicator with a range of 3.5 to 6.5 inches of mercury.



Frasca 142 Single Engine Conversion Kit

## COPILOT FLIGHT INSTRUMENTS

To increase training capacity a second set of flight instruments are available on Models 242 and 242T. This option includes an airspeed indicator, attitude indicator, altimeter, vertical velocity indicator, directional gyro, and turn indicator. Operator induced Captain and Copilot flight instrument failures are independent of each other providing maximum training flexibility.

## DYNAMIC CONTROL LOADING

All model series 140 trainers include control response that varies with airspeed just as it does in the aircraft. The Dynamic Control Loading (DCL) option provides high fidelity control pressure response to speed and other aerodynamic changes. It replaces the passive centering spring device found in the standard 140 simulators with 3 high torque d.c. motors. These provide variable control pressures to closely approximate actual aircraft response and feedback. Because of DCL, simulators incorporating an autopilot system will have the additional benefit of flight controls that realistically move in response to autopilot input. DCL is standard on all 240 series simulators.

## VARIABLE SCALE X, Y PLOTTER

The variable X, Y Plotter shows real-time simulator ground-track while providing a permanent record. It may be used with blank paper to record specific maneuvers, or in conjunction with a sectional or instrument enroute chart showing the simulator's progress relative to known navigation facilities. Plotter scale is variable between .1 and 100.99 miles per inch. Because the simulator's navigation database encompasses a global gaming area, it is possible to designate any navigation facility as the current center point of the Plotter-board area. Both plotter scale and the gaming area center may be quickly changed through the Operator Control Monitor.



Frasca Model 141 with optional Wide Fuselage and Instrument Panel

## WIDE FUSELAGE

For training situations that require two cockpit seats but not a second set of controls or instruments, a wide fuselage is offered. This option puts a slightly widened but otherwise unmodified Model 141 or 142 instrument panel into a wider shell and adds a right seat. This option is commonly installed by customers that perform crew training.

## OTHER POPULAR OPTIONS

King Silver Crown Avionics  
KFC 200 Flight Director  
Nav 2 glideslope  
Mb on altimeter (in/hg normal)  
Turn Coordinator  
Tool kit  
Spare parts

**Leaders  
in cost-effective  
simulation.**